Fermilab Fermi National Accelerator Laboratory

Technical Division-Machine Shop

Welder Performance Qualification Record

In accordance with Fermi WPS Ti-1 & Ti 2

Date *11/21/2008*

Revision *2* **Revision Date** *6/22/2009* **Remarks** *Revised to correct clerical errors*

Welders Name: *Daniel J. Watkins* **Fermi ID#** *03991N* **Weld Stamp #** *24*

WPS Number: *Fermi WPS Ti-2* **Test Coupon** 172423 **Production Weld** *N/A*

Welding Process/Type: *GTAW/Manual* *Welded in Inert Chamber @ 10PPM with 99.99% Argon*

Type of Joint Welded: *Pipe Groove Weld* **Joint Types Qualified:** *Groove and Fillet Welds*
Open Root without solid backing

Base Metals Welded: *SB-861, Grade 2* *to* *SB-861, Grade 2*

Welder Variables (QW-350)	Actual Variables Used	Range Qualified
AWS Classification:	*ERTi-2*	
Filler Metal Specification (SFA)	*5.16*	*5.16*
Filler Metal F-No.	*F-51*	*F-51 thru F 55*
Filler Metal Product Form	*Bare(Solid)*	*Bare (Solid)*
Consumable Insert	*No Insert Used*	*Without Insert Only*
P- or S- Number to P- or S- Number:	*P-No. 51 to P-No. 51*	*P-No. 51, 52, 53, 61, & 62*
Base Metal Thickness (inches):	*0.109"*	*WPS Limit*
Pipe Diameter (inches):	*1.5"*	*1" minimum*
Deposit Thickness (inches)	*0.109"*	*0.218" maximum*
Welding Position/Progression	*5G*	*F, V, O*
Backing Gas	*Argon Backing Gas Used*	*With Backing Gas Only*
GTAW-Current/Polarity	*DCEN*	*DCEN Non-Pulsing*

Machine Welding Variables (QW-360)	Actual Variables	Range Qualified
Direct/Remote Visual Control	*N/A*	*N/A*
Automatic Voltage Control	*N/A*	*N/A*
Automatic Joint Tracking	*N/A*	*N/A*
Welding Position	*N/A*	*N/A*
Consumable Insert	*N/A*	*N/A*
Backing	*N/A*	*N/A*
Single/Multiple Pass Per Side	*N/A*	*N/A*

Fillet Welds: *Qualified to make fillet welds of any size on all base material thickness and pipe diameters of any size.*
Notes: *Welded in inert chamber with 99.99% Ultra Pure Argon @ 10 PPM Oxygen content, inverter power source, 3/32" Ceriated Tungsten with a #4 Gas Lens Cup. Joint completed in two passes. Joint configuration: 37.5 degree bevel with a 1/32" land and 1/16" root gap. 1.5" diameter pipe coupon with a 0.109 thick wall by 8" long. Slight weave on cover pass.*

Guided Bend Test (QW-160) *None*

Visual examination results: *Visual exam satisfactory per QW-302.4 and QW-194*

Radiographic test results: *Acceptable per QW-302.2 and QW-191*

Visual/Radiographic tests conducted by: *Alloy Weld Inspection Company, Inc. Register Number 172423*

Welding of Test Coupon conducted by: *Fermi National Accelerator Laboratory* *Verification Number 112108-1RH*

We certify that the statements in this record are correct and that the test coupons were prepared, welded, and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

Fermi National Accelerator Laboratory Roger Hiller — Authorized Representative

00362N — Fermi ID#